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HEALTH OF SCHOOL CHILDREN. STATEMENT OF THE ENDEAVORS OF THE BOARD OF EDUCATION TO CONSERVE THE HEALTH OF CHILDREN UNDER ITS CARE.

BY

LUTHER HALSEY GULICK, M.D.

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A STATEMENT OF THE ENDEAVORS OF THE BOARD
OF EDUCATION TO CONSERVE THE HEALTH
OF CHILDREN UNDER ITS CARE.

By LUTHER HALSEY GULICK, M.D.,

NEW YORK.

DIRECTOR OF PHYSICAL TRAINING, NEW YORK PUBLIC SCHOOLS.

WHEN one speaks of the schools of New York City, visions of great buildings containing thousands of children, situated in the congested parts of the city, come to mind. Public School 188, Manhattan, down on the lower East Side, has on its register 4,363 pupils. Public School 84, Brooklyn, has on its register 4,805 pupils. These enormous schools, embracing numbers equivalent to the population of a fair-sized village community, form, however, only one phase of the picture. Public School 121, Brooklyn, last winter had on its register 36 pupils. The total number of principals, instructors, assistants, and the like was—one. Public School 7, Richmond, had 26 pupils on its roll; and in place of the 66 class-rooms in Public School 84, Brooklyn, it contained but one room, thus corresponding exactly to those village school buildings that have become so well known in the history of this country.

In discussing the health of school children we

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are then discussing an enormously varied group of problems—those of the single-room building in a sparsely settled territory, where the children live a considerable distance from the school; and at the same time those of the great compact building situated in the most congested districts of the world, with narrow streets, high adjoining buildings, amid a population having the most varied national characteristics.

Ventilation.—There has been appointed upon the Building Committee, which has charge of the erecting and the equipment of all new buildings, a duly qualified medical man, Dr. Louis Haupt, thus insuring to this committee that expert counsel which is needed in all such work.

All school buildings now being erected are being ventilated by the so-called "plenum" system. The air is forced into the room and finds its way out through special vents leading to the roof. Special hoods are installed to assist the flow and to prevent back draughts. The air is taken into the building at the level of the first or second stories, is carried through ducts to the cellar, there passes through a blower, and is carried into the class-room. It enters the class-room near the ceiling and is dispersed through all parts of the room by deflectors, finds its way finally to a vent near the floor, and is forced out by the incoming air. The system is planned on the basis of furnishing 30 cubic feet of air to each pupil per minute, the basis of calculation being 50 pupils to a room. Each room contains an average of 9,000 cubic feet, or 180 cubic feet per pupil.

In view of the fact that there has been considerable criticism, not with reference to the theory of this plenum system, but with reference to the efficiency with which it was administered

in the New York public schools, Dr. C. Ward Crampton, Assistant Director of Physical Training, in cooperation with the Building Department, recently made a series of tests of 23 rooms in different buildings. I quote below part of Dr. Crampton's report. These rooms were selected, part of them in a direction toward the wind, part away from the wind; and in other respects as well the conditions sought were as varied as possible. I shall not burden you with a detailed report, but it was with great satisfaction that we discovered that the average income of air for these 23 rooms was 1,584 cubic feet per minute. This was not estimate, but careful measurement. "The air in the rooms, with but few exceptions, was rapidly changed in six or seven minutes. In those rooms where the air change was not complete, it was due to corners in which the air seemed to stagnate. This was the only evidence of failure in this system of ventilation. No pupils were seated in these corners."

Heating.—"In the plenum system the air strikes first a series of steam pipes, known as 'tempering coils,' which are only in use when the temperature of the outside air is below 40°. These coils bring the air to this temperature. The air is then passed through two series of steam coils. The upper one is set at 70°, the lower one at 68°. When the temperature of the air in the duct entering the class-room falls below 70°, the steam is automatically turned into the upper coil. Should it continue to fall below 68°, the steam is also turned into the lower coil. This is accomplished automatically by thermostats."

Purity of Air.—"The Department of Buildings is now installing an entirely new feature which will insure not only purity of air, but the proper

amount of humidity as well. There is to be placed in one of the new buildings an air washer or purifier. The air passes a tempering coil and is drawn through a chamber in which it is thoroughly saturated with water from spray jets. It is next passed through a series of baffle plates which reduces the water and leaves the air at the 50 per cent. humidity mark. The surfaces of these plates catch all the excess moisture, and with it are deposited all particles of dust and impurities. The air then passes through the heating system and is distributed through the building. This is a great advance, as it insures the cleanliness of the air supplied to the class-room. It appears to me that this system of ventilation now in use is most highly efficient in that it unquestionably furnishes each child with the requisite amount of pure air."

Accommodations.—That there should be over 70,000 children who can be only partially accommodated in the schools in their vicinity seems in itself to be a condemnation of the Board of Education, particularly in view of the fact that this condition has now obtained with greater or lesser severity for a number of years. The reasons back of these conditions are not primarily financial, as they are supposed to be, but they are administrative. For example, last year there moved out of the lower East Side of Manhattan 50,000 persons who went over to Brooklyn and settled in what is known as Brownsville. The school population of Brownsville at that time was 14,221. It was immediately increased by 3,123—22 per cent. in one year. This was one of the most seriously congested districts in the city before the flood of immigration came. It had at that time 6,323 pupils on "part time." The increase raised the number on "part time" to 11,031 and increased the

school population to 17,344. If this immigration had come to a district less seriously burdened, it would not have been so difficult to meet. The school accommodation, which was already inadequate, was overwhelmed. Extensive plans were already under way to remedy the congestion. These have been extended and hastened. Five buildings, which will accommodate 10,150 children, are now under way. Six thousand sittings would give each child a seat; but the Board are so sure of the continued growth of this district that they have not only allowed a leeway of 4,000, but have already had recommended by the Sites Committee three additional buildings.

It usually takes three years after the need for increased school facilities has been demonstrated to discover the proper site, to have this site approved, the property condemned, plans drawn and approved, and the building erected. The difficulty is not that the city is growing faster than it is possible to plan ahead for it, but that it is growing in unexpected ways, in unexpected places, and at unexpected times. There are now approximately enough sittings in Greater New York to accommodate all the children, but the location of the sittings does not correspond with the location of the children. A building with 1,000 seats cannot accommodate 1,000 children without ignoring their individual needs by dividing them into ten groups of exactly fifty each.

Lighting.—The standard size of rooms being placed in new buildings is 30 x 22 x 14 feet. The principle of unilateral lighting is regularly adopted, except in corner rooms. The so-called "H" building permits of the location of the school in the middle of a block and affords to every room adequate light and area. This is a type of building

which I understand was developed by Mr. Snyder, the Superintendent of Buildings. The amount of window space is never less than 20 per cent. of the floor area, nor more than 25 per cent. The top of the window is 13 feet 6 inches from the floor. The distance across the room is never over 22 feet, which is less than twice the height.

Vision.—However perfectly the school building may be ventilated, with what degree of perfection light may be regulated and admitted, temperature controlled, humidity adjusted, the desk perfectly fitted to the individual, periods of sitting still shortened, and periods of varied bodily and manual activity lengthened—the central difficulty of school life remains. It is a difficulty which is dependent upon the fact that the treasures of civilization are stored in print—in minute black marks upon a white surface, which must be held relatively close to the eyes. This involves a conscious attention and strain of the ocular apparatus to which it was not adapted during the long ages when it was being developed. Even under the most favorable conditions, the strain of civilization rests most heavily upon the child with reference not merely to the eye, but also to the nerve centers back of the eyes, and to that very great symptom-complex which is associated, as we have only recently discovered, with eyestrain.

Examinations made in many cities and those made in New York under the direction of the Board of Health, have satisfied us that not less than 30 per cent. of all children in our elementary schools are suffering from ocular defects demanding correction, and not less than 17 per cent. have ocular defects so severe as to be a serious menace to their progress. These defects acquire their significance, not because they are defects

merely, but because they are defects of that portion of the human organism upon which learning and education largely rest. The relation of this condition to school work is shown by the fact that ocular defects are in direct ratio to the length of time the pupil has attended school. This is the point of strain, this is the point that demands more aggressive and constant safeguarding than any other of the systems of apparatus that we each possess.

For diagnosis and treatment the Board of Education must depend upon the Board of Health. All that the Board of Education can do is to secure adequate lighting and suitable print, to prevent long consecutive use of short focus work, and to get the children to hold the book at a fair distance and at a right angle.

Seating.—The largest sedentary class in the civilized world is probably that of public school children. The significance of this fact is fully realized when we remember that the ordinary effects of sedentary occupation are accentuated, because the individuals are growing rapidly. Hence the interference is not merely with function, but with growth as well. The effects of badly-fitting school desks accentuate the manifest evils of sitting still. A desk which is too high, too low, or too far from the pupil may easily be the indirect agent for causing scoliosis, producing or aggravating myopia or astigmatism, interfering with the development of the legs through pressure upon the popliteal arteries, and the development of automatism in the unconscious effort of the child to relieve the strained positions.

There are two ways in which the Board of Education aims to combat the evils that are incident to sitting at school desks. The first of

these is by minimizing the length of time that the child shall sit still, and the second by having a school desk as nearly related to the child who is to sit in it as is feasible. Every child in the elementary schools is required, at least twice in the morning and once in the afternoon, to take the so-called "setting-up exercise." This exercise secures a large excursion of the diaphragm, thus accelerating abdominal circulation, increasing respiration and circulation in the arterial and venous system generally by the contraction of the large muscular masses of the back and legs. It also most forcibly extends the spine, calling attention to those parts of it which are bent forward chiefly in the sitting position, namely, the dorsal and cervical portions.

The modern school differs from the school of a generation ago in no respect more markedly than with reference to its relation to the activity of the child. It seemed to be the earlier practice to regard the children as so many vessels that were to be filled with knowledge. The present situation is more accurately represented by the statement that the children are regarded as individuals, who have powers that are to be developed by specific activities of various kinds; and that these specific activities involve not merely action of the intellectual powers, but that they involve the activities of the hands, of the body, and of the vocal organs as well. The result is that instead of sitting still five hours per day, there is relatively little sitting still. A rather careful inquiry among the schools would indicate that in the lower grades less than 50 per cent. of the time is spent in sitting still, and that only in the last grades is more than three-fifths of the time spent in relatively motionless position. I

think, then, it is clear that if children do not sit still for any long, consecutive period and for not more than two hours out of the five, and that during the day they take exercises specifically designed to counteract the effect of a predominately sedentary occupation—the problem is not as grave as it would be under the conditions of five hours of sitting still which obtained in the schools of a generation ago.

With reference to the adaptation of the desk to the child there are very important things to be said. The Board of Education, after careful investigation, has selected forms of adjustable school seats and desks, in order to give to children that which shall be best related to their needs. As a matter of fact, however, after the preliminary adjustment, these seats are rarely altered, for the following reasons:

Pupils in high schools have no permanent seats, but go from room to room as they change subjects. Thus each pupil during the day will occupy four or five different seats. It is obvious that under such conditions it is neither necessary nor possible to have the seats adjusted to the individual pupil. All that can be done is to have the general grading of seats correspond to the general grading of the schools, and then to seat the tall children in the back of the room and the short children in the front. There is, however, in this administration, one obvious and thus far, unsolved difficulty. Children who are myopic or who are deaf in one or both ears, should be seated so that the disability will interfere with the progress as little as possible. If the case chances to be one of the tall pupils and the indications point to his being seated where the seats are low, the difficulty is real.

With reference to the elementary schools it must be explained that in the upper two years a large number of schools is organized on the so-called "departmental" basis, which means that the pupils go from room to room in pursuing the different subjects, exactly as pupils do in the high schools. The conditions that have just been described for the high schools apply, therefore, equally to these elementary schools organized on the departmental basis. This organization is proceeding rapidly and bids fair to become general.

Beginning now with the lowest grades in the kindergarten, we find small, solid chairs, which are designed to be moved into any part of the room where they are needed. These chairs are used by different pupils and at tables rather than at desks, as the floor must be cleared for the games that occupy such a large fraction of time in the kindergarten.

In the classes above the kindergarten and below the departmental grades, we find the following fact: In 70,000 cases the pupil is able to come to school but part of the day. This is because of congestion. These are the so-called "part time" classes. Two pupils each day occupy the same desk. The only adjustment possible in such cases is the general one and of having in each room such an assortment of such sizes of furniture as will suit the average class. The classes are promoted twice each year, but the changes of individual children from room to room and from school to school are so great as to constitute a serious difficulty in the way of adjustment of school furniture to the individual, even in those schools where there are no "part time" classes.

The adjustment of the seat and desk to the individual pupil involves the following measurements

of the child: Height of knee, in order that the seat may be adjusted; and height of elbow when the child is properly seated, for the adjustment of the desk. If the desk is adjustable front and back, as it should be, an additional measurement is needed in order to adjust the desk to the proper distance. I have indicated merely the most fundamental measurements.

To secure these measurements for the 600,000 children of New York City schools is at the present time impossible. In our large schools are from 1,000 to 5,000 pupils. The adjustment of each desk to fit in several respects the measurements of these numbers of children presents a problem in administration which has not been solved. It would involve the special employment of a considerable force of persons. I believe the time will come when with the cooperation of the Board of Health it will be possible to do far better than is now being done in the adjustment of furniture to the individual; but in view of the conditions of relatively brief sitting periods and many periods of muscular activity, I believe that there are other and more pressing problems with reference to school health than that of the adjustment of school furniture.

Scoliosis.—Recognizing that the constant carrying of a weight on one side of the body is one of the predisposing causes toward scoliosis, particularly in girls of weak musculature, I had the weights of books carried home by children examined in a large number of schools. The facts with reference to the seventh year, dealing with girls approximately thirteen years of age, may be taken as a fair sample. From observations made of this class in forty-five schools it was found that the number of books carried on the average was 4.7, and that the

average weight was 5 1-8 pounds. The books were carried on the left arm by 69 per cent. of the pupils. The reasons for carrying books about are: first, some of the books are needed for home study; secondly, as many of the schools are used in the evenings by other pupils, the desks must be left empty; thirdly, and very prominently, the pride of many girls who like to go on the streets with a large number of books so as to appear to be in a high grade. One report noted a child who had carried twenty-one blank pads to swell the total. It is our endeavor, which endeavor is being furthered by a large number of principals and teachers, to induce the children to carry these books alternately on the right and on the left arm.

It should also be noted in this connection that the chief aim of physical training in the schools is to secure a good posture and particularly vigor of the muscles that support the spine and hold it erect. We have thus eliminated pretty largely muscular weakness and habitually bad posture as factors in the direction of scoliosis in the children of the New York City public schools.

Over-Study.—In view of the normal activity of children, there is no danger, so far as school work is concerned, that they will do work involving too great activity. The danger is that the work will be too one-sided intellectually. If we analyze the school work for the first year, we discover that out of the total 25 hours per week, which are available between nine in the morning and three in the afternoon on the five school days, $1\frac{1}{4}$ hours are given to opening exercises, $7\frac{1}{2}$ hours are given to physical training, talks on cleanliness, and the like, games and recesses, 1 2-3 hours to penmanship, $1\frac{1}{2}$ hours to nature study, 2 hours to drawing and constructive work, $\frac{1}{2}$ hour to weaving with cord and raffia, 1 hour

to sewing. A total of 15 hours and 25 minutes, or 62 per cent. of all the time, is thus given to work which is nearly all of it such as to involve muscular activity, none of it involving study. It is needless to say that no home work is demanded of these little children. The total amount of time per week given to English is $7\frac{1}{2}$ hours, and to mathematics 2 hours and 5 minutes, making a total of 9 hours and 35 minutes per week, or a little under two hours per day. Two hours per day judiciously interspersed with recesses, games, gymnastics, hand work, drawing, and music, is not an excessive burden.

Turning now to the fourth year, during which the children are about ten years of age, we find $1\frac{1}{4}$ hours given to opening exercises, $2\frac{1}{4}$ hours to physical training, recesses and organized games; $1\frac{1}{4}$ hours to penmanship, $1\frac{1}{2}$ hours to nature study, 2 hours to drawing and constructive work. 1 hour to sewing, 1 hour to music, making a total of $10\frac{1}{4}$ hours, or 41 per cent. The Board of Superintendents recommends to parents that the children be not allowed to study over an hour per day outside of school on this work. Thus we have, during the day four hours spent on intellectual tasks, broken up into short periods by physical training, manual training, music, recesses, and with less than one hour of home study. This does not seem to me to be either in theory or in practice excessive.

With reference to the eighth year, where the pressure is said to be the worst, we find $1\frac{1}{4}$ hours spent in opening exercises, $1\frac{1}{4}$ hours in physical training or games, 1 hour and 20 minutes given to drawing and constructive work, 1 hour to music, 1 hour and 20 minutes of science work, which is, to a considerable extent, done with

apparatus, so that it should be classed with the more organic subjects. This gives a total of 6 hours per week. It leaves 3 hours and 48 minutes per day given to intellectual tasks. No period is longer than 40 minutes. The amount of home study is by request of the Superintendent of Schools to be limited to an hour and a half per day.

In view of these facts, how are we to account for the other facts that children are frequently overworked and that the number of nervous and fatigued children is considerable? There are several other factors in the case. I have not discussed the problem of overwork in the high schools, because they include such a small factor of the total number of pupils. I believe, however, that the conditions in the high schools are not as favorable with reference to overwork as they are in the elementary schools. It is unfair to charge up to the Department of Education all the evils that result from very short nights, after-school work of an economic character, malnutrition, and the effects of tenement housing.

1. It is true that many children are nervous and ambitious to a far greater extent than are other children, and that the amount of pressure which it is necessary to bring to bear upon average children to secure from them normal and reasonable work, tends to produce overexertion on the part of the more sensitive ones. This will account for the strenuous life of many ambitious girls and a few boys.

2. There is a considerable number of cases where overwork is to be accounted for on the ground of excessive expenditure of energy in other directions than that of school life. There are many children who have not yet reached adolescence whose hours of sleep are totally uncontrolled, who are

usually out late in the evening. Upon such children the burden of school life does rest too heavily, because they do not have the needed recuperation.

3. A most unfortunate class consists of those who are obliged to work either early or late to help toward their own support or that of the family.

The present course of study is adapted neither to the very bright nor to the exceedingly slow. It is inevitable, therefore, that the bright shall find it at times tending to mind wandering, because it is too easy; and the exceedingly slow shall find it pressing upon them with undue severity. For these reasons it has been made increasingly easy for children to "skip" grades. The complete remedy for both of these cases would be to have so few children in each class that there could be a very high degree of personal acquaintance and individual treatment. The difficulties in the way of this will be discussed in another section.

Malnutrition.—We must all agree that it is fundamental to the welfare of the state that children shall be well-nourished during the growing period. There is little of any value in the world, in any permanent way, unless children grow up healthy and vigorous. Our science, art, literature, and religion will not only sink into relative obscurity, but they have in themselves no possible good except upon the basis of the life of those which they are to serve. With this general truth (which no doubt will be differently stated by different people) we must all agree.

But in a rapidly-developing state, a state in which every decade presents problems which are both fundamental and new, there exist inevitably, confusion and lack of agreement with reference to that particular arm of the State which shall look to and provide for the various

needs of the community. The Department of Education has developed gradually, out of the needs of pauper children. It is no longer a charity but is patronized by the great majority of our citizens. The Board of Health arose out of the need of corporate action with reference to the spread of contagious diseases.

Many children in this community are underfed. Many more are badly fed, with equally injurious results. Does this problem belong to the Board of Health or to the Board of Education? It is a matter that relates to health and yet education is fruitless except upon the basis of good nutrition. The British Parliament is apparently about to authorize the supplying of meals to young children—a plan that has already been adopted in Paris and a number of other European cities. This is one of the problems that has not been attacked by either the Board of Health or by the Board of Education in New York City. It is nevertheless a fundamental one—and I believe, a prominent one—so long as poverty and ignorance shall continue. It demands solution. The solution may be carried out by the Board of Education, but ultimately it is a medical question—not an educational question. The authoritative word and public opinion both are to be made through the medical men of this city. I believe the time will come when all school children will be offered an adequate lunch, furnished by the Board of Education. There must needs be, however, a large amount of public education before this can be accomplished.

Feeble-Minded Children.—During the past few years it has slowly developed in this city, as in other cities, that there is a small percentage of children—from one-half of one to two per cent.—so below grade mentally as to be incapable of the

most profitable education in classes with average children. It is further recognized that one of the fundamental difficulties with reference to these unfortunates in many cases is malnutrition. Accordingly, the Board of Education has employed a specialist, Dr. Elias G. Brown, who spends his whole time in examining those whom principals and teachers think may be in such condition as to profit most by the special classes provided for these cases. He advises with reference to the care of such children and counsels with reference to their condition. This is recognized to be but a first step in a much larger plan. The success of treating these children in special classes, by methods in which manual work, physical work, baths, and the like are made prominent, has been such as to warrant extension of the work to include other classes of cases.

Defective Children.—The Board of Education last winter, on the recommendation of the Superintendent of Schools, Dr. William H. Maxwell, has taken up the consideration of care for the blind, the deaf, and those who are crippled. It is not too much to say that provision in special classes and special institutions will be made for these cases as rapidly as is possible. Hasty movement, however, in the face of so complex a set of problems is, of course, impossible. Each special class must be approached tentatively and methods of work best adapted to a public school system under American conditions must be slowly elaborated.

Physical Training.—The amount of time that can be spent for physical training in the different grades is as follows (time schedule on the basis of 1,500 minutes per week):

Years	I	II	III	IV	V	VI	VII	VIII	
	450	165	165	150	90	90	90	90	minutes

During these comparatively few moments it is obviously impossible to attempt even to give each pupil that general physical exercise which all children need. That is, it is not possible during the school day to undertake that general physical training which belongs to the playground, to the athletic field, or to the home. Neither is it possible, in this brief time, to give the pupil all the recreation that is needed. The first and most important aim of our school gymnastics is to counteract the effect of the school desk.

The partially flexed spinal column allowing the sternum to approximate closer to the vertebrae than normal, which allows the muscular layers of the abdominal wall, as well as the supporting members of the abdominal viscera to relax, results in a train of evils which is perfectly familiar to all since the classic work of Glenard, "Le Ptosis General." A decreased portal circulation, lessened intestinal peristalsis, a lower blood pressure, a shallower breathing—a familiar symptom-complex—these symptoms are more marked in a growing child than in adults whose muscles and bones have already acquired full development. It is not wise to give exercises that shall induce perspiration, for change of clothing is not possible and the child must continue in his school work immediately after the exercises. Nor is it possible to give exercises that shall involve a large amount of noise. In the great majority of cases the pupils must take their exercises in the class-room. Eighty-three of the five hundred buildings possess gymnasiums, which renders the problem somewhat easier.

The first and most direct means taken to meet these conditions is what we call our "Two Minute Exercise." In it there is emphasis upon forced deep breathing, with its effect upon portal circu-

lation through the influence of the alternate contraction and relaxation of the diaphragm. Vigorous work is given to the extensors of the spine. This is in order to counteract the constant stretching that occurs when one bends the back forward. These exercises also call into play the large muscles surrounding the shoulder and the hip joints, as well as the extensors of the leg. Thus the large muscle masses of the body are exercised, the circulation thereby quickened, and the consumption of oxygen increased. These exercises are given at the end of each hour in the morning and between the two hours in the afternoon. The windows are opened during the exercises. Thus it is that where the system is fully carried out, a pupil never sits two consecutive hours without there intervening this group of exercises.

The second measure which is taken to combat the effects of the school desk, is the formal physical training. This consists of a series of exercises, the chief emphasis of which is placed upon movements of the large muscular masses rather than upon delicate and complicated movements of small muscular groups. The effects sought are primarily physiological. These exercises are not designed to take the place of play, nor to furnish the general exercises that the pupil needs. They are designed to combat the effects of the school desk, to secure to each pupil good carriage, and erect and vigorous habits of walking.

In the schools having gymnasiums it is possible to use the lighter forms of apparatus, such as dumb bells, wands, Indian clubs, and the like. In other schools free exercises only can be used. In both cases there are prescribed and taught by the teachers series of exercises which demand

increasing muscular strength, endurance, and control from grade to grade. In addition to these formal gymnastic exercises, it is possible in the lower grades to have a considerable number of vigorous gymnastic games, having for their purpose general recreation and physical training, which in the upper years must be carried on outside of school hours.

With reference now to the after-school activities, in the line of athletics, for our public school boys and girls: This work must, in the nature of the case, be voluntary. It cannot be carried on officially by the Board of Education, for this Board is not related to the out-of-school activities of children. There has, therefore, come into existence a great organization, known as the "Public Schools Athletic League." This League has on its board of directors the President of the Board of Education, the Superintendent of Schools, district superintendents, high and elementary school principals, class teachers, business men in the community, and others who are especially competent and interested in the problems of athletics for boys and girls.

The first endeavor of this Athletic League was in the direction of establishing great sets of city games of the ordinary kind: running, jumping, relay racing, etc. We clearly understand that these conventional athletics suffice merely to bring into prominence those boys who need athletic training the least; that is, those who are by inheritance and test endowed in physique and stamina.

Fashion and wont are such great elements among boys as well as adults that this seems to be the most useful way of teaching the athletic spirit, cultivating school loyalty, and the like

These great city games constitute the dramatic elements that appear in the public press and which are talked about by the boys. They do not, however, represent the chief work of the League, nor its main interests. Its main interests and its largest activities are to get boys having average or below average attainment, into vigorous athletic sports. The devices that are used for this purpose are, in the nature of the case, experimental and original. I mention but one: it is called "class athletics." We are giving trophies to the class in the borough of a given grade that can run the fastest for a short distance, or that can jump the farthest. Every member of the class is timed in his running or measured in his jumping, and an average is struck. This is compared with the average for other classes. There is much interest in this. The boys who are most expert help the boys who are less expert, because the average is influenced even more by the inferior runners than by the superior ones.

The problem of athletic sports for girls we are just now seriously attacking. There is now a public wave of interest in athletics for girls and women. This interest has already, in many cases, led girls and women to overdo. They have not had preliminary athletic experience, nor are they physiologically competent to wisely undertake athletics of as strenuous a character as those which are provided for boys and men. Our first object, then, is to exercise a controlling influence with reference to these sports, to see that they are not overdone and that unprepared individuals are kept out of them altogether. We aim also to devise new sports and to modify old ones, so that they shall be as adapted to the development of girls as the present forms of athletics are to boys.

The Board of Education is conducting two forms of after-school activity which are closely related to the health of its children. One is known as the Evening Recreation Centers, and the other as the Afternoon and Evening Playgrounds. During the year 1904-1905, in the most congested parts of the city, 21 schools were opened in the evening as recreation centers. In these schools ample opportunities were afforded for games, dancing, gymnastics, as well as the more quiet forms of recreation. The average attendance at these 21 recreation centers was 7,276 per evening. Some of the recreation centers were equipped with shower baths. The average number of persons taking baths per evening was 148. During the summer, after the close of the regular schools, the Board of Education opens a large number of gymnasiums and playgrounds in the afternoon. Last summer there were in operation 67 of such playgrounds. Regular gymnastic work and plays and games of many kinds, under expert supervision, are carried on in this way. The average attendance last year was 38,566 per day. During the evenings 11 of the schools having suitably equipped roofs, opened these roofs to the public, provided bands, and supplied expert supervision. The average attendance at these 11 roofs was 32,148. The 7 schools having bath equipments during last summer gave a total of 288,387 baths. The average per day is not recorded.

Instruction in Physiology and Hygiene.—In passing, mere reference can be made to this subject. It would demand a whole paper to acquaint you with any degree of fairness with the respects in which this work is being done.

Instruction is given as to the effects of alcohol

and narcotics, in accordance with the law of the State. In doing this, particular pains are taken to emphasize the constructive phases of the subject—not to elaborate upon pathology or to depict pathological conditions. The case against the general consumption of alcohol is sufficiently great, so that it is found to be wholly unnecessary to resort to any extreme statements in order to carry out the provisions of the law.

A single point of view is taken each year rather than the mere repetition of the subject matter with greater detail year after year. For example, in the fourth year there is the general topic of good health; the fifth year, what children may do in the emergencies in which they may find themselves; the sixth year, health from the standpoint of the dweller in towns, contagious diseases, water supply, and the like. In the seventh year we find the usual physiology and hygiene. In the eighth year the questions of personal habits, personal control, and the like are discussed, as well as to some extent the nervous system and the special senses.

Ideals.—It may not be out of place to indicate some ideals toward which additional progress should be made with reference to the health of school children.

1. There should be individual care, personal inquiry and knowledge of the home life of approximately the lower tenth of every class. This includes those who, for one reason or another, twice fail of promotion. This work is now being done to some extent by the school nurses, under the employ of the Board of Health. The work should be very greatly extended. Allowing that there are but 500,000 children, of which but 50,000 need this individual attention, and that each school nurse can wisely handle 100 such cases, keeping

in personal touch with them and with their families, it would take 500 nurses. These 500 nurses would add to the wealth of the State by saving to efficient lives a large fraction of those who now come to adult life with such a degree of impaired vigor or defective development as to be relatively unproductive in an economic sense. Whatever is necessary to be done to prevent incompetence must be done. This can only be accomplished by personal attention of a consecutive character by a person who is qualified from the standpoint of health, in cooperation with a physician.

2. We need to have the consecutive records of all children as to age, height, weight, eye, ear, nose, throat, heart, lungs, and so on. Only in this way can the highest degree of efficiency be secured. I was much interested recently to see in the current press accounts of medical care of certain child laborers in India. This care was given most efficiently, not from the standpoint of humanitarian interests, but because it was discovered that the working capacity of the children was a direct function of their health, and that it paid financially to keep them well. It will pay well educationally for us to keep track of the children with reference to these matters of health. It is a relative waste of money to endeavor to train the nervous system of a child that is seriously undernourished, whose growth is perverted, and who has reflex irritation from defective teeth, eyes, and so on. This work which is being undertaken in such a vigorous way by the Board of Health, must be extended and coordinated more perfectly with the Board of Education.

3. The size of classes should be decreased, so that the nervous strain upon teachers shall be lessened;

so that there shall be opportunity for a larger degree of individual attention than now obtains; so that teachers may be able to become personally acquainted with the children and to some extent have regard for their health in a way that is not possible in classes of fifty or sixty, where each one must be pressed into certain objective standards.

4. London has a minimum requirement of 30 square feet of playground space for each child in connection with the schools. This is very little. New York should do no less, and yet for a large school—for Public School 188, in which there are approximately 5,000 children—it would take 150,000 square feet, or a square of 130 yards on the side. An average city block up-town is 200 feet wide and 600 feet long. It would take a block 50 feet wide and 300 feet long to provide the needed area for this one school.

5. There should be an open-air playground within walking distance of each child. What is walking distance for a child three years old needs to be very near. Places where older boys may play ball need not be so close together.

6. Special classes and schools should be organized for defective children of all kinds. It matters not if these are crippled because of disability of the osseous system, the ocular, the auditory, or from central lack of development. The demands both of humanity and of social economy involve the care of these unfortunates by the public schools.

In making progress such as is here suggested, two fundamental factors are involved: first, an agreement as to what ought to be done; and second, the power to do. Concerning the wisdom of most of these steps the medical and educational men

of the world are pretty well agreed, but the power is not yet present. Institutions like the public schools cannot proceed very much in advance of public sentiment, particularly when such advance involves the expenditure of large amounts of money. To furnish 500 school nurses together with such organization, supplies, and the like as they would need, would involve the annual expenditure of upwards of \$500,000. To secure the consecutive examination of all children, as is recommended, would involve the employment for the city, I should estimate, of not less than 250 medical examiners. The present property value of the public schools is not less than \$150,000,000. To add to this so that each child could be in a class not to exceed thirty children, would involve the expenditure of an additional 60 per cent., or \$90,000,000. The additional teaching and supervisory force would cost about \$15,000,000 per annum more than the \$25,000,000 now spent. To furnish for each school thirty square feet of playground space would cost many more millions; how many it would be difficult to estimate. To furnish a playground within walking distance of each child in the congested districts is not possible on the present basis. If each child below Fourteenth Street were to be given a space three yards square, it would demand that approximately every fifth building should be torn down in that area. The development of many-storied playgrounds seems to me to be inevitable. The development of special classes and schools for all defectives would be an exceedingly large enterprise.

The most serious obstacle in the progress of such a program as I have outlined is the lack of informed public opinion as to the necessity for these things. Our city possesses the money and is inclined to

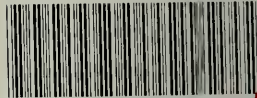
deal very generously with all matters affecting the health and welfare of children. But the parents of most of these children were brought up under conditions of either relatively little school life, or of school life on the old basis of the three "R's" and under conditions where a considerable degree of that general motor education which goes with domestic work and cooperation of boys with the parents was possible. These citizens probably fail to realize that the conditions have changed completely; that it is no longer possible for children in central parts of New York City to play out of doors, as they themselves did, or to secure that muscular training and that motor education in connection with domestic work or cooperation with the fathers in their work which they themselves secured; and further, that these functions must be discharged with reference to the children by the State through the public schools, because under the conditions named the home no longer serves the need of the children in these respects. What we need, then, is education of public opinion.

The most capable body for the formation of opinion with reference to the health of school children and with reference to specific steps that need to be taken in order to wisely meet the conditions of child-life as presented by the city, is the distinguished professional body, members of which I have the privilege of addressing this evening. Progress is being made in every one of the directions that I have named. The Board of Education is not merely interested, but regards the health of school children as fundamental—as more fundamental than education—and recognizes its own responsibility with reference to these things; but under present conditions of public opinion it cannot proceed materially faster than it is now

going. Great strides have been made during the last decade. In fact, nearly all that is being done with reference to the health of the children has been developed during this decade. All that has been outlined can be carried out as soon as it is possible to procure the funds. The physicians of this community are in a position to speak authoritatively with reference to these things, as no other persons can speak. They can enable the Board of Education to do these things. Without their help the Board of Education must proceed slowly and lamely in these matters.

During the winter of 1905 there was an extended attack on the Board of Education because it used physical training, manual training, drawing, music, cooking—all those subjects that involve the training of the body, the training of the eye and the hand, the training of the breathing apparatus, the vocal apparatus—all of them involving central coordinations, motor images, and the like. That was a time when the Board of Education needed the support of the medical men of this city. Such support was not given. The Board of Education needs and craves not only the advice, but also and equally the support for every step which it takes with reference to increasing the health, the personal efficiency, and the power to live of these complex groups of children that come to it from all over the world. For these reasons it was with peculiar pleasure and gratification that I received the kind invitation which has made the presentation of this paper possible.

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